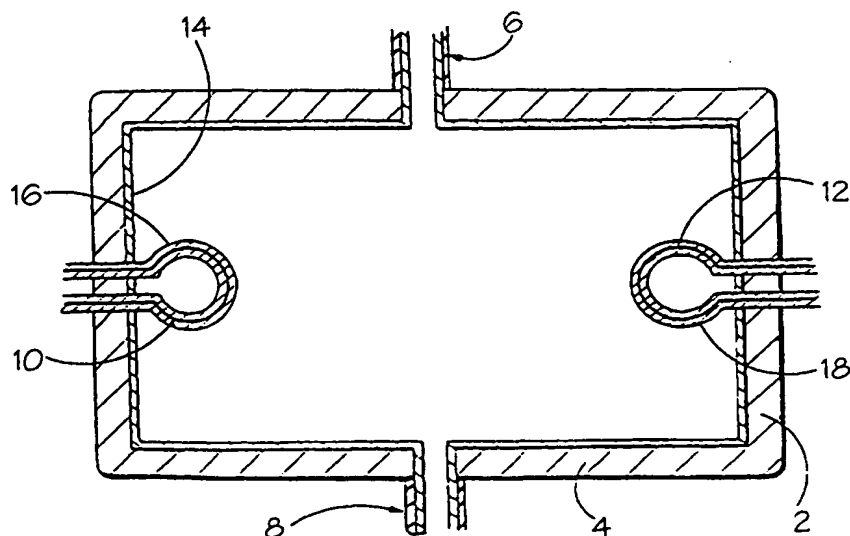




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(54) Title: APPARATUS AND METHOD FOR DETERMINING DIELECTRIC PROPERTIES OF AN ELECTRICALLY CONDUCTIVE FLUID

**(57) Abstract**

An apparatus is disclosed for determining dielectric properties of an electrically conductive fluid. The apparatus comprises an electromagnetically resonant cavity (2, 4, 6, 8) which may form part of a pipeline. An insulating layer (14) isolates the cavity's conductive wall from fluid within the cavity. An emitter antenna (10) and associated drive electronics are provided for emitting electromagnetic radiation into the cavity and the antenna is electrically isolated from fluid in the cavity. Means (12) are also provided for detecting resultant electromagnetic radiation in the cavity. The apparatus may be used in multi-phase metering.